

ABET Coordinator  
2016–2017  
Committee on Appointments and Promotions  
2007–2009, 2017–Present  
Area Committee Chairman  
2002–2013  
Graduate Committee  
1991–1994, 2003–2005, 2006–2008, 2010–2012  
Undergraduate Committee  
1994–1996, 1998–2000, 2001–2003, 2005–2007, 2011–Present  
Undergraduate Coordinator  
1994–1996, 1998–1999  
Undergraduate Mentor  
2006–2014  
Qualifying Exam Coordinator  
1991–1993  
Computer Committee, Chair  
1994–1996, 1997–2013  
Electrical Engineering Commencement Coordinator  
2002  
Graduate Admissions Committee  
1997–1998, 2008, 2013  
Facilities Committee  
1997–1998  
Honesty Committee  
1993–1994  
Eta Kappa Nu Faculty Advisor  
1991–1996

February 8, 2019

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## Robert Louis Stevenson

### *Litigation Experience*

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                             Buchanan, MI 49107  
  
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### **Expert Testimony (last 6 years)**

Expert witness for Oracle Corporation et al., AT&T, Inc., et al., and eHarmony, Inc. in “Click-to-Call Technologies LP v. Oracle Corporation et al.,” “Click-to-Call Technologies LP v. AT&T, Inc., et al.,” and “Click-to-Call Technologies LP v. eHarmony, Inc.” Civil Action Nos. 1:12-cv-00465; 1:12-cv-00468; 1:12-cv-00466 in the Western District of Texas (Markman hearing testimony).

Expert witness for Flashpoint Technology, Inc., in “Certain Electronic Imaging Devices,” ITC Investigation No. 337-TA-850 (deposition and hearing testimony).

Expert witness for Autodesk, Inc. in “American Imaging Services, Inc. v. Autodesk, Inc.,” Civil Action No. 3:09-CV-733-M in the Northern District of Texas Dallas Division (trial testimony).

Expert witness for Adobe Systems, Inc. in “Everyscape, Inc. v. Adobe Systems,” Civil Action No. 10-cv-11597-RGS in the District of Massachusetts Boston Division (deposition testimony).

Expert witness for Cochlear Corp. in the case “Cochlear Corp., et al. v. Alfred E. Mann Foundation for Scientific Research,” Civil Action No. CV 07-08108 GHK (CTX) in the Central District of California (deposition and trial testimony).

Expert witness for Macronix in “Creative Integrated Systems, Inc. v. Nintendo of America, Inc. et al.” Civil Action No. CV10-2735 AHM (VBKx) in the Central District of California, Southern Division (deposition and trial testimony).

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Expert witness for Corporation in “SDI Technologies, Inc. v. Bose Corporation” Cases IPR2013-00350 and IPR2013-00465 before the Patent Trial and Appeal Board (deposition testimony).

Expert witness for Canon Inc. in “Canon Inc v. Intellectual Ventures II LLC.” Cases IPR2014-00631 and IPR2014-00632 before the Patent Trial and Appeal Board (deposition testimony).

Expert witness for Canon Inc. in “Intellectual Ventures II LLC. v. Canon Inc.” Case 13-CV-473 (SLR) for the District of Delaware (deposition testimony).

Expert witness for CTP Innovations, LLC in “Eastman Kodak Company, et al. v. CTP Innovations, LLC.” Case IPR2014-00790 before the Patent Trial and Appeal Board (deposition testimony).

Expert witness for Google, Inc. in “Videoshare, LLC. v. Google, Inc. et al.” Civil Action No. 13-cv-990 (GMS) in the District of Delaware (deposition testimony).

Expert witness for Canon, Inc., in “Technology Properties Limited, LLC et al. v. Canon, Inc. et al,” Case No. 4:14-cv-03640-CW in the Northern District of California, Oakland Division (deposition testimony).

Expert witness for Advanced Silicon Technologies, LLC., in “Certain Computing or Graphics Systems, Components Thereof, and Vehicles containing same,” ITC Investigation No. 337-TA-984 (deposition testimony).

Expert witness for Alcate-Lucent USA, Inc., in “Intellectual Ventures, et al. v. Toshiba Corporation, et al,” Case No. 1:14-cv-0764-WTL-TAB in the Southern District of Indiana Indianapolis Division (deposition testimony).

Expert witness for Nautilus Hyosung, Inc., in “Certain Automated Teller Machines, ATM Products, Components Thereof, and Products Containing the Same,” ITC Investigation No. 337-TA-972 (deposition and hearing testimony).

Expert witness for Toshiba., in “Intellectual Ventures, et al. v. Toshiba Corporation, et al,” Case No. 13-453-SLR-SRF in the District of Delaware (deposition testimony and trial testimony).

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Expert witness for Samsung Electronics Co. LTD. and Microsoft Corporation in “Microsoft Corporation, et al. v. FastVDO LLC.” Case IPR2016-01179 before the Patent Trial and Appeal Board (deposition testimony).

Expert witness for Samsung., in “Image Processing Technologies, LLC v. Samsung Electronics Co., LTD, et. al” Case No. 2:16-CV-0505-JRG in the Eastern District of Texas (deposition testimony).

Expert witness for Harmonic, Inc., in “Avid Technology, Inc. v. Harmonic, Inc.,” Case No. 17-682-GMS in the District of Delaware (deposition testimony).

Expert witness for IPDEV Co., in “IPDEV Co. v. Ameranth, Inc.,” Case No. 3:14-cv-01303-DMS-WVG in the Southern District of California (deposition testimony).

Expert witness for Funai, MediaTek, MStar, Vizio, LG and Sigma., in “Certain Semiconductor Devices and Consumer Audiovisual Products Containing the Same,” ITC Investigation No. 337-TA-1047 (deposition and trial).

Expert witness for LG Electronics, Inc., in “Mondis Technology LTD. v. LG Electronics, Inc., et al.,” Case No. 15-cv-4431 (SRC)(CLW) in the District of New Jersey (deposition).

Expert witness for Eagle View Technologies, Inc., in “Eagle View Technologies, Inc. et al. v. Xactware Solutions, Inc., et al.,” Case No. 1:15-cv-07025-RBK-JS in the District of New Jersey (deposition).

Expert witness for Apple Inc., in “Qualcomm Inc., v. Apple Inc.,” Case No. 3:17-CV-1375-DMS-MDDD in the Southern District of California (deposition).

Expert witness for Align Technology, Inc., in “Certain Intraoral Scanners and Related Hardware and Software,” ITC Investigation No. 337-TA-1090 (Markman hearing technology tutorial, deposition and hearing testimony).

Expert witness for Apple Inc., in “Qualcomm Inc., v. Apple Inc.,” Case No. 3:17-cv-00108-GPC-MDD and 3:17-cv-00110-GPC-MDD in the Southern District of California (deposition).

Expert witness for ZiiLabs Inc. Ltd., in “Certain Graphics Processors

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and Products Containing the Same,” ITC Investigation No. 337-TA-1099  
(Markman Hearing Technology Tutorial and deposition).

February 28, 2019



MARCH 2019

**Curriculum Vitae**

**Jonathan I. Arnold, Ph.D.**

*jonathan.arnold@chicagoecon.com*

**EDUCATION:**

Ph.D. Business Economics, Graduate School of Business, The University of Chicago

M.B.A. Finance and Accounting, The University of Chicago Graduate School of Business

B.A. Economics, The University of Chicago

**PROFESSIONAL EXPERIENCE SINCE 1995:**

2013 - Testifying Expert Economist, Chicago Economics Corp.

2013 - Senior Consultant, Compass Lexecon.

2012 - 2013 Chief Economist, Office of the Attorney General, New York State

2006 - 2012 Managing Principal, Analysis Group, Inc.

1995 - 2006 Principal, Chicago Partners

**TESTIMONY - SINCE 2003:**

- Declaration in *Class v. Samsung Telecommunications America*, U.S. District Court, Northern District of California, Case No. 3:14-cv-582-JD. (January 2019)
- Court Testimony in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court, Eastern District of Missouri, Case No. 09-CV-1252-ERW. (January 2019)
- Expert Report in re Transcare (Debtor) in the matter of *Salvatore Lamonica, as Chapter 7 Trustee for the Estates of TransCare v. Lynn Tilton*, U.S. Bankruptcy Court, Southern District of New York, Chapter 7 Case No. 16-10407. (November 2018)
- Rebuttal Expert Report in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court, Eastern District of Missouri, Case No. 09-CV-1252-ERW. (November 2018)
- Expert Report in *U.S.A. v. Matthew Connolly and Gavin Black*, U.S. District Court, Southern District of New York, Case No. 01:16-CR-00370 (CM). (September 2018)
- Deposition in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (August 2018)
- Expert Report in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (July 2018)



- Deposition in *Eagle View Technologies v. Xactware Solutions*, U.S. District Court for the District of New Jersey, Civil Action No. 15-cv-07025. (May 2018)
- Expert Report in *State of Washington v. LG Electronics*, Superior Court of King County, Washington, Case No. 12-2-15842-8. (May 2018)
- Rebuttal Expert Report in *Eagle View Technologies v. Xactware Solutions*, U.S. District Court for the District of New Jersey, Civil Action No. 15-cv-07025. (May 2018)
- Expert Report in *Eagle View Technologies v. Xactware Solutions*, U.S. District Court for the District of New Jersey, Civil Action No. 15-cv-07025. (May 2018)
- Expert Report in *Eagle View Technologies v. Xactware Solutions*, U.S. District Court for the District of New Jersey, Civil Action No. 15-cv-07025. (April 2018)
- Testimony In the Matter of Certain Two-Way Radio Equipment and Systems, Related Software and Components Thereof, United States International Trade Commission, Washington, D.C., Investigation No. 337-TA-1053. (January 2018)
- Deposition In the Matter of Certain Two-Way Radio Equipment and Systems, Related Software and Components Thereof, United States International Trade Commission, Washington, D.C., Investigation No. 337-TA-1053. (November 2017)
- Expert Report In the Matter of Certain Two-Way Radio Equipment and Systems, Related Software and Components Thereof, United States International Trade Commission, Washington, D.C., Investigation No. 337-TA-1053. (October 2017)
- Deposition In re Avaya, U.S. Bankruptcy Court of the Southern District of New York, Ch. 11, Case No. 17-10089. (October 2017)
- Expert Report In re Avaya, U.S. Bankruptcy Court of the Southern District of New York, Ch. 11, Case No. 17-10089. (October 2017)
- Deposition in *Stark Master Fund Ltd. and Stark Global Opportunities Master Fund Ltd. v. Credit Suisse Securities*, U.S. District Court for the Eastern District of Wisconsin, No. 14-cv-689. (August 2017)
- Testimony in *The Financial Oversight and Management Board for Puerto Rico, as representative of The Commonwealth of Puerto Rico* (PROMESA Title III No. 17 BK 3283-LTS); in re: *The Financial Oversight and Management Board for Puerto Rico, as representative of Puerto Rico Highways & Transportation Authority* (PROMESA Title III, No. 17 BK 3567-LTS); *Peaje Investments v. Puerto Rico Highways & Transportation Authority* (Adv. Proc. No. 17-151-LTS in 17 BK 3567-LTS and Adv. Proc. No. 17-152-LTS in 17 BK 3283-LTS) (August 2017)
- Rebuttal Expert Report in *Stark Master Fund Ltd. and Stark Global Opportunities Master Fund Ltd. V. Credit Suisse Securities*, U.S. District Court of the Eastern District of Wisconsin, No. 14-cv-689. (August 2017)
- Deposition in *The United States of America, ex rel., John H. Oberg v. Pennsylvania Higher Education Assistance Agency*, U.S. District court of the Easter District of Virginia, No. 1:07-cv-00960-CMH-JFA. (August 2017)
- Deposition in *The Financial Oversight and Management Board for Puerto Rico, as representative of The Commonwealth of Puerto Rico* (PROMESA Title III No. 17 BK 3283-LTS); in re: *The*



Financial Oversight and Management Board for Puerto Rico, as representative of Puerto Rico Highways & Transportation Authority (PROMESA Title III, No. 17 BK 3567-LTS); Peaje Investments v. Puerto Rico Highways & Transportation Authority (Adv. Proc. No. 17-151-LTS in 17 BK 3567-LTS and Adv. Proc. No. 17-152-LTS in 17 BK 3283-LTS) (July 2017)

- Declaration in *The Financial Oversight and Management Board for Puerto Rico, as representative of The Commonwealth of Puerto Rico* (PROMESA Title III No. 17 BK 3283-LTS); in re: *The Financial Oversight and Management Board for Puerto Rico, as representative of Puerto Rico Highways & Transportation Authority* (PROMESA Title III, No. 17 BK 3567-LTS); *Peaje Investments v. Puerto Rico Highways & Transportation Authority* (Adv. Proc. No. 17-151-LTS in 17 BK 3567-LTS and Adv. Proc. No. 17-152-LTS in 17 BK 3283-LTS) (July 2017)
- Expert Report in *Stark Master Fund Ltd. and Stark Global Opportunities Master Fund Ltd. V. Credit Suisse Securities*, U.S. District Court of the Eastern District of Wisconsin, No. 14-cv-689. (July 2017)
- Expert Report in *The United States of America, ex rel., John H. Oberg v. Pennsylvania Higher Education Assistance Agency*, U.S. District court of the Easter District of Virginia, No. 1:07-cv-00960-CMH-JFA. (June 2017)
- Deposition in *The State of Illinois v. Hitachi*, Circuit Court of Cook County, Illinois, County Department, Chancery Division, Case No. 2012-CH-35266. (April 2017)
- Hearing Testimony in *Arista Networks v. Cisco Systems*, International Trade Commission Washington, D.C., Investigation No. 337-TA-977. (April 2017)
- Deposition in *Arista Networks v. Cisco Systems*, International Trade Commission Washington, D.C., Investigation No. 337-TA-977. (February 2017)
- Second Supplemental Expert Report in *Arista Networks v. Cisco Systems*, International Trade Commission Washington, D.C., Investigation No. 337-TA-977. (February 2017)
- Supplemental Expert Report in *Arista Networks v. Cisco Systems*, International Trade Commission Washington, D.C., Investigation No. 337-TA-977. (February 2017)
- Expert Report in *Arista Networks v. Cisco Systems*, International Trade Commission Washington, D.C., Investigation No. 337-TA-977. (January 2017)
- Rebuttal Expert Report in *The State of Illinois v. Hitachi*, Circuit Court of Cook County, Illinois, County Department, Chancery Division, Case No. 2012-CH-35266. (January 2017)
- Court Testimony in a consolidated proceeding comprising *Brigade Leveraged Capital Structures Fund v. Alejandro Garcia-Padilla* (16-1610), *National Public Finance Guarantee v. Alejandro Garcia-Padilla* (16-2101), *Dionisio Trigo-Gonzalez v. Alejandro Garcia-Padilla* (16-2257), and *U.S. Bank Trust National Association v. The Commonwealth of Puerto Rico* (16-2510), U.S. District Court, District of Puerto Rico. (September 2016)
- Deposition in *MyFord Touch Consumer Litigation*, U.S. District Court, Northern District of California, San Francisco Division, Case No. 13-cv-3072-EMC. (September 2016)
- Responsive Damages Expert Report in *MyFord Touch Consumer Litigation*, U.S. District Court, Northern District of California, San Francisco Division, Case No. 13-cv-3072-EMC. (September 2016)

- Expert Report in *The State of Illinois v. Hitachi*, Circuit Court of Cook County, Illinois, County Department, Chancery Division, Case No. 2012-CH-35266. (August 2016)
- Deposition in *Philips v. Ford*, U.S. District Court, Northern District of California, San Jose Division, Case No. 5:14-cv-02989-LHK. (August 2016)
- Trial Testimony in *Nortek Air Solutions v. Energy Labs*, U.S. District Court, Northern District of California, San Jose Division, Case No. 5:14-cv-02919-BLF. (August 2016)
- Damages Expert Report in *MyFord Touch Consumer Litigation*, U.S. District Court, Northern District of California, San Francisco Division, Case No. 13-cv-3072-EMC. (August 2016)
- Expert Report in *Philips v. Ford*, U.S. District Court, Northern District of California, San Jose Division, Case No. 5:14-cv-02989-LHK. (July 2016)
- Responsive Expert Report in *MyFord Touch Consumer Litigation*, U.S. District Court, Northern District of California, San Francisco Division, Case No. 13-cv-3072-EMC. (May 2016)
- Supplemental Declaration *Lena K. Thodos and David Miller v. Nicor*, Circuit Court of Cook County, Illinois County Department, Chancery Division, Case No. 11CH06556. (April 2016)
- Deposition in *Nortek Air Solutions v. Energy Labs*, U.S. District Court, Northern District of California, San Jose Division, Case No. 5:14-cv-02919-BLF (March 2016)
- Expert Report in *Nortek Air Solutions v. Energy Labs*, U.S. District Court, Northern District of California, San Jose Division, Case No. 5:14-cv-02919-BLF (February 2016)
- Deposition in *MyFord Touch Consumer Litigation*, U.S. District Court, Northern District of California, San Francisco Division, Case No. 13-cv-3072-EMC. (February 2016)
- Deposition in *Richard S. Stack, M.D. v. Abbott Laboratories*, U.S. District Court, Middle District of North Carolina, Case No. 1:12-CV-148. (January 2016)
- Expert Report in *MyFord Touch Consumer Litigation*, U.S. District Court, Northern District of California, San Francisco Division, Case No. 13-cv-3072-EMC. (January 2016)
- Deposition in *Lena K. Thodos and David Miller v. Nicor*, Circuit Court of Cook County, Illinois County Department, Chancery Division, Case No. 11CH06556. (December 2015)
- Expert Report in *Richard S. Stack, M.D. v. Abbott Laboratories*, U.S. District Court, Middle District of North Carolina, Case No. 1:12-CV-148. (December 2015)
- Declaration in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-CV-05567. (November 2015)
- Declaration in *Lena K. Thodos and David Miller v. Nicor*, Circuit Court of Cook County, Illinois County Department, Chancery Division, Case No. 11CH06556. (October 2015)
- Deposition in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (October 2015)
- Supplemental Expert Report in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-cv-05567. (September 2015)

- Deposition in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-cv-05567. (August 2015)
- Rebuttal Expert Report in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-cv-05567. (June 2015)
- Expert Report in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-cv-05567. (May 2015)
- Expert Report in *Thomas & Betts International v. Burny*, U.S. District Court, Western District of Tennessee, Case No. 2:14-cv-2296-JPM-tmp. (April 2015)
- Testimony in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (March 2015)
- Supplemental Expert Report in *Russell Dover v. British Airways*, U.S. District Court,
- Deposition in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-cv-05567. (August 2015)
- Rebuttal Expert Report in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-cv-05567. (June 2015)
- Expert Report in *Russell Dover v. British Airways*, U.S. District Court, Eastern District of New York, Case No. 1:12-cv-05567. (May 2015)
- Expert Report in *Thomas & Betts International v. Burny*, U.S. District Court, Western District of Tennessee, Case No. 2:14-cv-2296-JPM-tmp. (April 2015)
- Testimony in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (March 2015)
- Deposition in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (February 2015)
- Deposition in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (January 2015)
- Expert Report in *Jo Ann Howard and Associates v. J. Douglas Cassity*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (January 2015)
- Reply Declaration in *Cryolife, Inc. v. C.R. Bard, Inc.*, U. S. District Court of the District of Delaware, Case No. CV-14-00559-SLR. (January 2015)
- Declaration in *Cryolife, Inc. v. C.R. Bard, Inc.*, U. S. District Court of the District of Delaware, Case No. CV-14-00559-SLR. (September 2014)
- Expert Report in *Illinois Pension Litigation*, Circuit Court for the Seventh Judicial Circuit, Sangamon County Illinois, Case No. 2014-MR1. (August 2014)
- Deposition in *Jo Ann Howard and Associates v. J. Douglas Cassity, et al.*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (August 2014)
- Expert Report in *Jo Ann Howard and Associates v. J. Douglas Cassity, et al.*, U.S. District Court Eastern District of Missouri, Case No. 09-CV-1252-ERW. (July 2014)



- Testimony in SolidFX, LLC v. Jeppesen Sanderson, Inc., U.S. District Court, District of Colorado, Case No. 11-CV-1468. (April 2014)
- Supplemental Expert Report in SolidFX, LLC v. Jeppesen Sanderson, Inc., U.S. District Court, District of Colorado, Case No. 11-CV-1468. (April 2014)
- Deposition in Noble Systems Corporation v. TRG Holdings LLC, JAMS, Case No. 1440003731. (April 2014)
- Expert Report in Noble Systems Corporation v. TRG Holdings LLC, JAMS, Case No. 1440003731. (March 2014)
- Affidavit in Lena K Thodos and David Miller, et al v. Nicor, Inc. Northern Illinois Gas Company, U.S. Circuit Court of Cook County, Illinois County Department, Chancery Division, Case No. 11CH06556. (February 2014)
- Testimony in C. Geoffrey Hampson, Christopher Hampson, and Hampson Equities, Ltd., v. Live Current Media, Inc. and David Jeffs, JAMS, Case No. 1260002566. (October 2013)
- Deposition in C. Geoffrey Hampson, Christopher Hampson, and Hampson Equities, Ltd., v. Live Current Media, Inc. and David Jeffs, JAMS, Case No. 1260002566. (October 2013)
- Expert Report in C. Geoffrey Hampson, Christopher Hampson, and Hampson Equities, Ltd., v. Live Current Media, Inc. and David Jeffs, JAMS, Case No. 1260002566. (September 2013)
- Testimony in AM General, LLC v. BAE Systems, Inc., et al., St. Joseph Superior Court, State of Indiana County of St. Joseph, Case No. 71D07-0907-PL-00195. (October 2012)
- Deposition in SolidFX, LLC v. Jeppesen Sanderson, Inc., U.S. District Court, District of Colorado, Case No. 11-CV-1468. (February 2012)
- Deposition in St. Joseph Superior Court, State of Indiana County of St. Joseph, Case No. 71D07-0907-PL-00195. (May 2012)
- Supplemental Expert Report in AM General, LLC v. BAE Systems, Inc., et al., St. Joseph Superior Court, State of Indiana County of St. Joseph, Case No. 71D07-0907-PL-00195. (April 2012)
- Rebuttal Expert Report in AM General, LLC v. BAE Systems, Inc., et al., St. Joseph Superior Court, State of Indiana County of St. Joseph, Case No. 71D07-0907-PL-00195. (April 2012)
- Expert Report in AM General, LLC v. BAE Systems, Inc., et al., St. Joseph Superior Court, State of Indiana County of St. Joseph, Case No. 71D07-0907-PL-00195. (March 2012)
- Expert report in SolidFX, LLC v. Jeppesen Sanderson, Inc., U.S. District Court, District of Colorado, Case No. 11-CV-1468. (February 2012)
- Deposition in Edgenet, Inc. v. Home Depot U.S.A., Inc., and James Musial, State of Wisconsin, Circuit Court, Waukesha County, Case No. 10-CV-10910. (December 2011)
- Expert report in Edgenet, Inc. v. Home Depot U.S.A., Inc., and James Musial, State of Wisconsin, Circuit Court, Waukesha County, Case No. 10-CV-10910. (October 2011)
- Testimony in BGCantor Market Data, L.P. v. Tullett Prebon Americas Corp., American Arbitration Association, Case No. 50-148-T-00737-10. (September 2011)

- Deposition in BGCantor Market Data, L.P. v. Tullett Prebon Americas Corp., American Arbitration Association, Case No. 50-148-T-00737-10. (July 2011)
- Second Supplemental Expert report in BGCantor Market Data, L.P. v. Tullett Prebon Americas Corp., American Arbitration Association, Case No. 50-148-T-00737-10. (July 2011)
- Supplemental Expert report in BGCantor Market Data, L.P. v. Tullett Prebon Americas Corp., American Arbitration Association, Case No. 50-148-T-00737-10. (July 2011)
- Expert report in MBDA UK Limited v. Raytheon Company, American Arbitration Association, Case No. 50-180-T-00462-04. (June 2011)
- Expert report in BGCantor Market Data, L.P. v. Tullett Prebon Americas Corp., American Arbitration Association, Case No. 50-148-T-00737-10. (June 2011)
- Testimony in Agility Defense & Government Services, Inc. v. DynCorp International, LLC, American Arbitration Association, Case No. 13-132-00990-10. (April 2011)
- Deposition in Agility Defense & Government Services, Inc. v. DynCorp International, LLC, American Arbitration Association, Case No. 13-132-00990-10. (March 2011)
- Testimony in Citadel Investment Group, L.L.C. v. Matthew B. Hinerfeld, American Arbitration Association, Case No. 51 116972 09. (February 2011)
- Deposition in Citadel Investment Group, L.L.C. v. Matthew B. Hinerfeld, American Arbitration Association, Case No. 51 116972 09. (February 2011)
- Expert report in Citadel Investment Group, L.L.C. v. Matthew B. Hinerfeld, American Arbitration Association, Case No. 51 116972 09. (February 2011)
- Expert report in Agility Defense & Government Services, Inc. v. DynCorp International, LLC, American Arbitration Association, Case No. 13-132-00990-10. (December 2010)
- Arbitration testimony in ADA-ES, Inc., et al. v. Norit Americas, Inc., American Arbitration Association, Case No. 13-132- Y 00718 09. (October 2010)
- Deposition in ADA-ES, Inc., et al. v. Norit Americas, Inc., American Arbitration Association, Case No. 30 192 Y 00718 09. (July 2010)
- Expert report in ADA-ES, Inc., et al. v. Norit Americas, Inc., American Arbitration Association, Case No. 30 192 Y 00718 09. (July 2010)
- Deposition in Citadel Investment Group, L.L.C. et al. v. Mikhail Malyshev and Jace and CIG GP, L.L.C., American Arbitration Association, Case No. AAA 51 166 00969 09 and Case No. AAA 51 166 00970 09. (June 2010)
- Expert report in Citadel Investment Group, L.L.C. et al. v. Mikhail Malyshev and Jace Kohlmeier and Mikhail Malyshev and Jace Kohlmeier v. Citadel Investment Group, L.L.C. and CIG GP, L.L.C., American Arbitration Association, Case No. AAA 51 166 00969 09 and Case No. AAA 51 166 00970 09. (June 2010)
- Expert report in Citadel Investment Group, L.L.C. et al. v. Mikhail Malyshev and Jace Kohlmeier and Mikhail Malyshev and Jace Kohlmeier v. Citadel Investment Group, L.L.C. and CIG GP, L.L.C., American Arbitration Association, Case No. AAA 51 166 00969 09 and Case No. AAA 51 166 00970 09. (June 2010)

- Deposition in Marc S. Kirschner v. Thomas H. Lee Partners L.P., et al. , U.S. District Court, Southern District of New York, Case No. 07 CIV 7074. (June 2010)
- Expert report in Marc S. Kirschner v. Thomas H. Lee Partners L.P., et al., U.S. District Court, Southern District of New York, Case No. 07 CIV 7074. (April 2010)
- Court testimony in Federal Trade Commission v. Lundbeck Inc. and State of Minnesota v. Lundbeck Inc., U.S. District Court, District of Minnesota, Case No. 08-CV-6379 (JNE/JJG) and Case No. 08-CV-6381 (JNE/JJG). (December 2009)
- Deposition in Encore Capital Group, Inc., et al.v. Jefferson Capital Systems, Inc., American Arbitration Association, Case No. AAA 13-148-Y-01611-08 and Case No. AAA #73-148-Y 32920-08. (August 2009)
- Supplemental expert report in Encore Capital Group, Inc., et al.v. Jefferson Capital Systems, Inc., American Arbitration Association, Case No. AAA 13-148-Y-01611-08 and Case No. AAA 73-148-Y-32920-08. (August 2009)
- Deposition in Federal Trade Commission v. Lundbeck Inc. and State of Minnesota v. Lundbeck Inc., U.S. District Court, District of Minnesota, Case No. 08-CV-6379 (JNE/JJG) and Case No. 08-CV-6381 (JNE/JJG). (August 2009)
- Expert report in CompuCredit Corporation v. Columbus Bank and Trust Company, Superior Court of Fulton County, State of Georgia, Case No. 2008-CV-157010. (August 2009)
- Expert report in Encore Capital Group, Inc., et al.v. Jefferson Capital Systems, Inc., American Arbitration Association, Case No. AAA 13-148-Y-01611-08 and Case No. AAA 73-148-Y-32920-08. (July 2009)
- Supplemental expert report in Federal Trade Commission v. Lundbeck Inc. and State of Minnesota v. Lundbeck Inc., U.S. District Court, District of Minnesota, Case No. 08-CV-6379 (JNE/JJG) and Case No. 08-CV-6381 (JNE/JJG). (July 2009)
- Supplement to expert report in Federal Trade Commission v. Lundbeck Inc. and State of Minnesota v. Lundbeck Inc., U.S. District Court, District of Minnesota, Case No. 08-CV-6379 (JNE/JJG) and Case No. 08-CV-6381 (JNE/JJG). (June 2009)
- Rebuttal expert report in Hawaii Structural Ironworkers Pension Trust Fund v. Calpine Corporation, Superior Court of the State of California, County of Santa Clara, Case No. 1-04-CV-021465. (May 2009)
- Expert report in Federal Trade Commission v. Lundbeck Inc. and State of Minnesota v. Lundbeck Inc., U.S. District Court, District of Minnesota, Case No. 08-CV-6379 (JNE/JJG) and Case No. 08-CV-6381 (JNE/JJG). (April 2009)
- Expert report in Hawaii Structural Ironworkers Pension Trust Fund v. Calpine Corporation, Superior Court of the State of California, County of Santa Clara, Case No. 1-04-CV-021465. (April 2009)
- Expert report in the arbitration between BASF Corporation v. POSM II Properties Partnership LP, American Arbitration Association, Arbitration No. 70-198-Y-00547-07 (May 2008)



- Deposition in General Electric Company v. BASF Corporation, U.S. District Court, Southern District of New York, Civil Action No. 06 CV 0283. (April 2008)
- Rebuttal expert report in General Electric Company v. BASF Corporation, U.S. District Court, Southern District of New York, Civil Action No. 06 CV 0283. (December 2007)
- Expert report in General Electric Company v. BASF Corporation, U.S. District Court, Southern District of New York, Civil Action No. 06 CV 0283. (December 2007)
- Court testimony in BASF Corporation v. Lyondell Chemical Company, Superior Court of Morris County, New Jersey (Law Division), Civil Action No. L-001069-05. (July 2007)
- Deposition in BASF Corporation v. Lyondell Chemical Company, Superior Court of Morris County, New Jersey (Law Division), Civil Action No. L-001069-05. (June 2007)
- Rebuttal expert report in Parmalat Securities Litigation, U.S. District Court, Southern District of New York, Master Docket No. 04 MD 1653 (LAK). (June 2007)
- Affidavit in BASF Corporation v. Lyondell Chemical Company, Superior Court of Morris County, New Jersey (Law Division), Docket No. MRS-L-001069-05. (June 2007)
- Expert report in re Parmalat Securities Litigation, U.S. District Court, Southern District of New York, Master Docket No. 04 MD 1653 (LAK) (and related to 04 Civ. 0030 (LAK)). (May 2007)
- Affidavit in BASF Corporation v. Lyondell Chemical Company, Superior Court of Morris County, New Jersey (Law Division), Civil Action No. L-001069-05. (April 2007)
- Deposition in BASF Corporation v. Lyondell Chemical Company, Superior Court of Morris County, New Jersey (Law Division), Civil Action No. L-001069-05. (March 2007)
- Rebuttal expert report in BASF Corporation v. Lyondell Chemical Company, Superior Court of Morris County, New Jersey (Law Division), Civil Action No. L-001069-05. (February 2007)
- Expert report in BASF Corporation v. Lyondell Chemical Company, Superior Court of Morris County, New Jersey (Law Division), Civil Action No. L-001069-05. (December 2006)
- Court testimony in Marshall, O'Toole, Gerstein, Murray & Borun v. Eazypower, Circuit Court of Cook County, Illinois (Law Division), Civil Action No. 98 L 013501. (April 2006)
- Court testimony in White v. Heartland High-Yield Municipal Bond Fund, U.S. District Court, Eastern Division of Wisconsin, Civil Action No. 00-C-1388. (December 2005)
- Court testimony in the arbitration between City of Bangor, Maine v. Citizens Communications Company v. Barrett Paving Materials, U.S. District Court, District of Maine, Civil Action No. 02-183-B-S. (September 2005)
- Deposition in Marshall, O'Toole, Gerstein, Murray & Borun v. Eazypower, Circuit Court of Cook County, Illinois (Law Division), Civil Action No. 98 L 013501. (August 2005)
- Deposition in Neopost Industrie v. PFE International, U.S. District Court, Northern District of Illinois Chicago Division, Civil Action No. 04-C-5047. (June 2005)
- Expert declaration (with Andrew Wong) in Abbott Laboratories v. ANDRX Pharmaceuticals, U.S. District Court, Northern District of Illinois, Eastern Division, Civil Action No. 05 C01490. (May 2005)



- Expert report in Neopost Industrie v. PFE International, U.S. District Court, Northern District of Illinois Chicago Division, Civil Action No. 04-C-5047. (May 2005)
- Expert report in IPXL Holdings v. Amazon, U.S. District Court, Eastern District of Virginia, Civil Action No. 04-CV-70. (July 2004)
- Deposition in White v. Heartland High-Yield Municipal Bond Fund, U.S. District Court, Eastern Division of Wisconsin, Civil Action No. 00-C-1388. (June 2004)
- Affidavit in IPXL Holdings v. Amazon, U.S. District Court, Eastern District of Virginia, Civil Action No. 04-CV-70. (June 2004)
- Expert disclosure in Chicopee v. Johnson & Johnson, American Arbitration Association, AAA No. 13 Y 181 010402. (June 2004)
- Expert report in IPXL Holdings v. Amazon, U.S. District Court, Eastern District of Virginia, Civil Action No. 04-CV-70. (June 2004)
- Expert report in Marshall, O'Toole, Gerstein, Murray & Borun v. Eazypower, Circuit Court of Cook County, Illinois (Law Division), Civil Action No. 98 L 013501. (June 2004)
- Deposition in American Century Services v. American International Specialty Lines Insurance, U.S. District Court, Southern District of New York, Civil Action No. 01-CV-8847. (May 2004)
- Expert report in White v. Heartland High-Yield Municipal Bond Fund, U.S. District Court, Eastern Division of Wisconsin, Civil Action No. 00-C-1388. (April 2004)
- Deposition in City of Bangor, Maine v. Citizens Communications Company v. Barrett Paving Materials, U.S. District Court, District of Maine, Civil Action No. 02-183-B-S. (February 2004)
- Testimony in the arbitration between Solvay Pharmaceuticals v. Duramed Pharmaceuticals, American Arbitration Association, Arbitration No. 53 181 00564 02. (January 2004)
- Deposition in the arbitration between Solvay Pharmaceuticals v. Duramed Pharmaceuticals, American Arbitration Association, Arbitration No. 53 181 00564 02. (January 2004)
- Expert report in the arbitration between Solvay Pharmaceuticals v. Duramed Pharmaceuticals, American Arbitration Association, Arbitration No. 53 181 00564 02. (December 2003)
- Declaration in American Century Services v. American International Specialty Lines Insurance, U.S. District Court, Southern District of New York, Civil Action No. 01-CV-8847. (September 2003)
- Expert report in American Century Services v. American International Specialty Lines Insurance, U.S. District Court, Southern District of New York, Civil Action No. 01-CV-8847. (August 2003)
- Testimony in the arbitration between Scean Lighting Systems v. Snap-on, American Arbitration Association, Arbitration No. 51 Y 181 00577 01. (June 2003)

- Expert report in the arbitration between Abbott Laboratories and Zurich American Insurance Company of Illinois (an international arbitration seated in London). (February 2003)

**TEACHING EXPERIENCE:**

- Columbia University and Duke University  
Guest Lecturer (2002 - 2004)
- The University of Chicago, Department of Economics and Graduate School of Business  
Lecturer (1998 - 1999)  
Taught microeconomics (topics included price theory, industrial organization, capital theory, principles of labor economics, and durable goods economics)
- Loyola University Chicago School of Law  
Lecturer of Law (1997 - 1998)  
Taught antitrust economics

**PROFESSIONAL AFFILIATIONS:**

American Economics Association

**OTHER:**

Certified Public Accountant



**STROZ FRIEDBERG**  
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## CURRICULUM VITAE

### **Geoff A. Cohen, Ph.D.**

Vice President

Boston, Massachusetts

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53 State Street, Suite 2200, Boston, MA 02109

#### **PROFESSIONAL EXPERIENCE**

**STROZ FRIEDBERG, LLC**

**Vice President**

2015 to Present

**ELYSIUM DIGITAL, LLC**

**Computer Scientist**

2005 to 2015

**COHERENCE ENGINE**

**Principal**

2003 to 2005

**CAP GEMINI ERNST & YOUNG CENTER FOR BUSINESS INNOVATION**

**Senior Consultant/Manager**

1999 to 2002

**IBM**

**Intern**

1996 to 1997

**DATA GENERAL**

**Intern**

1994 to 1995

**CONGRESSIONAL BUDGET OFFICE, NATIONAL SECURITY DIVISION**

**Assistant Analyst**

1992 to 1994

#### **EDUCATION**

**DUKE UNIVERSITY**

Ph.D., Computer Science, 2001

Dissertation: "Architecture, Implementation, and Applications of Bytecode Transformation"

**PRINCETON UNIVERSITY**

A.B., Woodrow Wilson School of Public and International Affairs, 1992

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### PUBLICATIONS

October 2010: "Targeting Third-Party Collaboration." In *Proc. Deterring CyberAttacks: Informing Strategies and Developing Options for U.S. Policy*.

May 2005: "The Invisible Handshake: Open Source Principles for Business." Monitor Networks White Paper.

2004: "Using Bytecode Transformation to Integrate New Features." In *Aspect-Oriented Software Development*.

2003: "Spaces of the Real: How Sensors Will Change the Way We See the World." *Perspectives on Business Innovation* 9: 79-84.

2002: "The Bionic Organization." Geoff A. Cohen and John S. Parkinson. *Perspectives on Business Innovation* 8: 79-84.

February 2002: "An Open Letter to the Software Nobility." Geoff A. Cohen and Alan Radding. Center for Business Innovation Working Paper.

June 2001: "Travels in Silicon: Reflections on the Center for Business Innovation's Untethered Devices Rave." Geoff A. Cohen and Mukul Kanabar. Center for Business Innovation Working Paper.

2001: "Taking Up Serpents: How ASPs are Changing the Face of Consulting." *Perspectives on Business Innovation* 6: 51-55.

2000: "Pushing Platforms: Corporate Venture Funds." *Perspectives on Business Innovation* 5: 26-32.

October 1999: "Toward Automatic State Management for Replicated Dynamic Web Services." Geoff Berry, Jeff Chase, Geoff Cohen, Landon Cox, and Amin Vahdat. In *Proc. Network Storage Symposium (NETSTORE'99)*.

June 1998: "Automatic Program Transformation with JOIE." Geoff A. Cohen, Jeffrey S. Chase, and David L. Kaminsky. In *Proc. USENIX Annual Technical Conference (ATEC'98)*.

### PATENTS

Dynamic object migration method using proxy object links to support automatic object distribution in an object-oriented environment. Geoffrey Alexander Cohen, David Louis Kaminsky, and Richard Adam King. US Patent 6,324,543, filed March 6, 1998, and issued November 27, 2001.

Method and system of running object-oriented programs across a network through compression and distillation of remote method invocation. Geoffrey Alexander Cohen, David Louis Kaminsky, and Jonathan Michael Seeber. US Patent 6,125,400, filed November 10, 1997, and issued September 26, 2000.

Apparatus and method for dynamically modifying class files during loading for execution. Geoffrey Alexander Cohen and Richard Adam King. US Patent 6,072,953, filed September 30, 1997, and issued June 6, 2000.

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Methods, systems, and computer program products for generating client/server applications. Geoffrey Alexander Cohen, James P. Gray, David Louis Kaminsky, Manoj V. S. Kasichainula, Richard Adam King, Zhiyong Li, and Phillip Allan Stone. US Patent 6,011,918, filed April 22, 1998, and issued January 4, 2000.

Process for running applets over non-IP networks. Geoffrey Alexander Cohen, David Louis Kaminsky, Richard Adam King, and Matthew Raymond MacKinnon. US Patent 5,805,829, filed October 1, 1996, and issued September 8, 1998.

### PRESS APPEARANCES

August, 26, 2010: "Big Brother and the Civilian Network." Geoff A. Cohen and Jay Stanley. *Homeland Security 2020: The Future of Defending the Homeland*. Day 4: Cyber Security. C-SPAN.

### TESTIMONY

2018: *UMG Recordings, Inc. et al. v. Grande Communications Networks LLC et al.*

U.S. District Court, Western District of Texas, Case No. 1:17-cv-00365

Submitted expert report on behalf of Grande Communications Network and Patriot Media Consulting (represented by Armstrong Teasdale) in a copyright matter involving BitTorrent.

2018: *3G Licensing, S.A. et al. v. Blackberry Limited et al.*

U.S. District Court, District of Delaware, Case Nos. 1:17-cv-00082, 83, 84, 85

Submitted multiple declarations regarding claim construction on behalf of 3G Licensing (represented by Susman Godfrey) in a patent matter regarding telecommunications technologies.

2018: *Eagle View Technologies, Inc. et al. v. Xactware Solutions Inc. et al.*

U.S. District Court, District of New Jersey, Case No. 15-cv-07025

Submitted multiple expert reports and was deposed regarding embodiment of asserted patents by Plaintiffs' products and non-infringement of Defendants' products on behalf of Xactware Solutions, Inc. (represented by McCarter & English) in a patent matter regarding roof modeling using aerial imagery.

2017, 2018: *Calendar Research LLC v. StubHub, Inc. et al.*

U.S. District Court, Central District of California, Case No. 2:17-cv-04062

Submitted multiple declarations, expert report, and was deposed on behalf of Calendar Research LLC (represented by Pierce Serenian) in a trade secret matter involving scheduling software.

2017, 2018: *Vaporstream, Inc. v. Snap Inc. d/b/a Snapchat, Inc.*

U.S. District Court, Central District of California, Case No. 2:17-cv-00220

Was deposed multiple times and submitted declaration and expert report regarding validity and submitted declaration regarding claim construction, on behalf of Vaporstream, Inc. (represented by Susman Godfrey) in a patent matter involving ephemeral data.

2017: *Intellicheck Mobilisa, Inc. v. Wizz Systems LLC*

U.S. District Court, Western District of Washington, Case No. 2:15-cv-00366



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Submitted expert report regarding validity on behalf of Intellicheck Mobilisa, Inc. (represented by Beusse Wolter Sanks & Maire) in a patent matter involving identification validation software.

2015, 2016: *DataTern, Inc. v. Blazent, Inc. et al.*

U.S. District Court, District of Massachusetts, Case No. 1:11-cv-11970

Was deposed, submitted two declarations concerning claim construction, and submitted two affidavits regarding infringement and validity on behalf of DataTern, Inc. (represented by McCarter & English) in a patent matter regarding object-relational mapping.

2016: *Sisoian v. International Business Machines Corporation*

U.S. District Court, Western District of Texas, Case No. 1:14-cv-00565

Submitted expert report on behalf of International Business Machines Corporation (represented by Yetter Coleman) in a matter involving trade secret allegations pertaining to Smalltalk source code.

2016: *Avid Technology, Inc. v. Media Gobbler, Inc.*

U.S. District Court, District of Massachusetts, Case No. 1:14-cv-13746

Was deposed and submitted expert report on behalf of Media Gobbler, Inc. (represented by Perkins Coie) in a matter involving allegations of trade secret misappropriation relating to audio file formats.

2015: *In re Application No. 13/447,932 to Collins et al.*

United States Patent and Trademark Office

Submitted declaration on behalf of Vaporstream, Inc.

2015: *Media Bridge LLC v. Clear Channel Outdoor Holdings Inc. et al.*

U.S. District Court, District of Delaware, Case No. 1:15-cv-00122

Submitted declaration on behalf of Media Bridge, LLC (represented by Farnan LLP) in a patent infringement matter regarding interactive mobile advertising platforms.

2015: *SpectorSoft Corporation v. Helios Software, LLC*

United States Patent and Trademark Office, Patent Trial and Appeal Board, Case No. 2015-01599

Submitted declaration on behalf of SpectorSoft Corporation (represented by Sterne, Kessler, Goldstein & Fox) in support of petition for inter partes review regarding a network monitoring patent.

2013, 2014, and 2015: *Helios Software LLC et al. v. SpectorSoft Corporation*

U.S. District Court, District of Delaware, Case No. 1:12-cv-00081

Testified as an expert witness at trial, was deposed, submitted two expert reports regarding invalidity, and submitted three declarations on behalf of SpectorSoft Corporation (represented by Shartsis Frieze) in a patent case regarding network monitoring.

2014: *PCMS International, Inc. v. 2295113 Canada, Inc.*

Delaware Court of Chancery, Case No. 8406

Was deposed and submitted expert report on behalf of 2295113 Canada, Inc. (represented by Richards Layton & Finger) in a trade secret dispute regarding point of sale system technology.

2014: *Amazon.com, Inc. v. Commissioner of Internal Revenue*

U.S. Tax Court, Case No. 31197-12



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Testified and deposed as expert witness and submitted two expert reports on behalf of Commissioner of Internal Revenue in a dispute regarding software valuation.

2013: *CA, Inc. v. New Relic, Inc.*

U.S. District Court, Eastern District of New York, Case No. 2:12-cv-05468

Was deposed, submitted two expert reports regarding invalidity and non-infringement, submitted three declarations, and submitted affidavit regarding claim construction on behalf of New Relic, Inc. (represented by Kecker & Van Nest) in a patent case involving application performance management software.

2013: *Internal Revenue Service v. National Treasury Employees Union, Chapter 68*

Testified as expert witness at arbitration on behalf of the National Treasury Employees Union in an employment matter involving reliability of a web application.

2012: *Apple Inc. v. Samsung Electronics Co., Ltd. et al.*

U.S. District Court, Northern District of California, Case No. 5:12-cv-00630

Was deposed on two occasions and submitted two declarations on behalf of Samsung Electronics Co., Ltd. et al. (represented by Quinn Emanuel Urquhart & Sullivan) in a patent matter regarding smartphone user interfaces.

2010: *Toshiba Corporation v. Imation Corp. et al.*

U.S. District Court, Western District of Wisconsin, Case No. 3:09-cv-00305

Submitted declaration on behalf of Imation Corp. et al. (represented by Fish & Richardson) in a patent matter involving DVD reader calibration technology.

2009: *The Matter of Certain Automotive Multimedia Display and Navigation Systems, Components Thereof, and Products Containing Same*

U.S. International Trade Commission, Case No. 337-TA-657

Testified as expert witness, was deposed on two occasions, submitted multiple expert reports, and submitted affidavit concerning patent infringement and claim construction on behalf of Honeywell International Inc. (represented by Robins Kaplan) in a patent matter regarding GPS and navigation systems.

2007: *Embassy Software Corporation v. eCopy, Inc.*

U.S. District Court, District of New Hampshire, Case No. 1:06-cv-00391

Submitted expert report on behalf of eCopy, Inc. (represented by Goodwin Procter) in a matter involving allegations of copyright and trade secret misappropriation regarding PDF creation software.

2006: *Omnipoint Holdings, Inc. v. Town of Brookline et al.*

U.S. District Court, District of Massachusetts, Case No. 1:05-cv-10644

Was deposed in official capacity as member of Town of Brookline committee in a matter regarding PCS technology and the placement of panel antennas in a residential area.

### **PROFESSIONAL AND CIVIC AFFILIATIONS**

- Member, Intelligence Science and Technology Experts Group (ISTEG), National Academy of Sciences, working in support of the Office of the Director of National Intelligence (ODNI)

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- Member, USACM Council, Public Policy Committee of the Association for Computing Machinery
- National Research Council Workshop on Deterring CyberAttacks
- Peer Reviewer, U.S. Department of Commerce Broadband Technology Opportunities Program

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**Joseph L. Mundy**  
**President, Vision Systems Inc.**

**EDUCATION:**

Rensselaer Polytechnic Institute

Ph.D. Electrical Engineering, 1969; M. Engr., 1966; B.E.E., 1963.

**GE Career Highlights:**

Dr. Mundy joined General Electric's Research and Development Center (CRD) in 1963. His early projects at CRD include: High power microwave tube design, a superconductive computer memory system, the design of high density integrated circuit associative memory arrays, the application of transform coding to image data compression. He is the co-inventor of varactor bootstrapping, a key technique widely used today in the design of MOS integrated circuits. His design of an integrated associative memory cell is still the most compact and requires only 5 MOS transistors.

From 1972 until 2002, Dr. Mundy led a group involved in the research and development of image understanding and computer vision systems. In the early 1970's his group developed one of the first major applications of computer vision to industrial inspection. A system was developed to inspect incandescent lamp filaments at the rate of 15 parts/sec and achieved classification performance of less than one error per thousand. The system operated in production for many years.

During the late 1970's his group developed an extensive system for the inspection of jet engine turbine components involving both 3-d range sensing and ultra-violet imaging of fluorescent crack features. This project involved the use of 3D bicubic CAD models to control the motion of a fifteen-axis inspection machine and the development of high throughput hardware for the processing of flaw image data. A final version of this machine was installed at Kelly AFB and was demonstrated to be superior to human inspectors with significant cost savings in used part recovery. This system pioneered many techniques in CAD model-supported inspection of industrial components.

In the 1980's Dr. Mundy's group began to apply image understanding algorithms to aerial reconnaissance. He developed a system for aircraft recognition based on a sparse feature, called the vertex-pair, which achieved 98% recognition accuracy in a test on realistic airfield scenes.

Dr. Mundy also participated in the development of a novel CAD-based wafer inspection system in the mid-1980s that led to a start up company. The company produced a working prototype in collaboration with Hewlett-Packard. The company, Contrex, was eventually sold to Fairchild Semiconductor.

During the 1990's the group developed the use of X-ray stereo photogrammetry to enable the measurement of internal casting features from multiple X-ray views. The system employs robust statistical bundle adjustment over dozens of views. The 3-d reconstruction achieves an accuracy of better than 0.005'', allowing practical manufacturing metrology. This new approach is currently being used in production by GE's Aircraft Engine division to plan drilling operations for airfoil castings.

While at GE, Dr. Mundy accumulated over 20 granted patents.

### **Brown University Career Highlights:**

Dr. Mundy joined the division of engineering at Brown in 2002 as Professor of Engineering (Research). Prof. Mundy carried out research in including nano-computing architectures with emphasis on CMOS devices with nano-scale gate lengths so that logic operation is dominated by thermal noise. He originated novel logic circuits that produce correct logic results even when random noise dominates the logic signals. He also developed a new approach to analyzing such circuits using queuing theory. These architectures are aimed at the next generation of silicon devices where the gate lengths are only a few nanometers. His research at Brown also included the development of new algorithms for the 3D reconstruction of blood vessel networks from computer tomographic imaging scanners (CT). These vessel networks provide unique information about the effect of cancer drugs on tumors, whose growth is enabled by the evolution of new vessel pathways. This work led to the founding of Bio Tree Systems, a company he co-founded to develop diagnostic tests for the effectiveness of cancer drugs. He also conducted research in aerial reconnaissance for the Department of Defense, including the National Geospatial Intelligence Agency. This work involved the development of new probabilistic representations of 3D space to account for the inherent ambiguity of extracting geometric descriptions from multiple image views. This new representation supports accurate determination of scene dynamics (change detection) in spite of the spatial ambiguity. While at Brown, he advised and graduated eight Ph.D. students who carried out research in image analysis and 3D modeling from imagery.

### **Vision Systems Career Highlights:**

Dr. Mundy left Brown in June 2016 to focus on his company, Vision Systems Inc. (VSI) as President. Vision Systems carries out research on aerial reconnaissance for the Department of Defense and other intelligence agencies. Some current projects at VSI include the fully automated construction of large scale digital elevation models (DEMs) from satellite imagery to support military planning and with commercial application to virtual reality tours for sports such as skiing and mountain biking. This work was funded by the Intelligence Advanced Research Project Agency (IARPA).



VSI also is developing an anatomical model of the human face to improve recognition accuracy in a 4 year research program on facial recognition. This research is also funded by IARPA and has commercial application in the field of plastic surgery. The development of a new model for the human eye anatomy is described in a paper at the Joint Meeting of the American Society of Plastic Surgeons in May 2016. VSI also has an ongoing project on the acquisition of large-scale 3-d models from satellite imagery to detect structural changes in buildings and other infrastructure. As an example, a digital surface model of the entire city of Mosul, Iraq was created fully automatically. This project also includes the automated extraction of polyhedral building models. VSI also is carrying out research for DARPA's Global Change Analysis (GCA) program. The research is focused on automatic description of damage caused by natural disasters such as earthquakes, based on 3-d models before and after the event.

#### **Academic Qualifications:**

Dr. Mundy was an adjunct full professor of computer science at Rensselaer Polytechnic Institute. He taught the core graduate course on Artificial Intelligence from 1975 until 1997. This course was selected to be presented in video format to a wide audience of graduate students at IBM, Xerox and GE.

Dr. Mundy has advised numerous masters and four PhD students in his capacity as adjunct professor. He also has had periodic adjunct appointments in the Department of Electrical and Computer Systems Engineering, where he has taught courses in digital image processing. He is co-taught a course on the application of mathematics to computer vision with Prof. Charles Stewart.

In collaboration with Prof. Deepak Kapur, Dr. Mundy developed new approaches to formal geometric reasoning based on algebraic techniques. These ideas resulted in the development of an automatic geometric theorem proving system called Geometer. Geometer was capable of proving many theorems from plane geometry and perspective construction. This work led to an international workshop on geometric reasoning in 1986 and produced an edited proceeding of the workshop papers.

In 1988, Dr. Mundy received the Coolidge Fellowship, which is GE's highest award of technical achievement recognizing academic impact as well as contribution to GE businesses. The fellowship provides a year sabbatical to carry out basic research.

While on this sabbatical at Oxford University during the years 1988-89, Dr. Mundy initiated a reading course in projective geometry that established a new approach to object modeling and recognition, called geometric invariance. In collaboration with Andrew Zisserman, David Forsyth (now at Berkeley) and a

PhD student Charles Rothwell, these ideas were implemented in a generic object recognition system, called LEWIS.

Geometric invariance research has made significant contributions to our basic understanding of computer vision. Two international workshops have been held, co-chaired by Dr. Mundy and Prof. Andrew Zisserman of Oxford. Both workshops have led to edited books of contributed and invited papers. In the first book, Dr. Mundy prepared an extensive appendix on the application of projective geometry in computer vision that has been influential to many research groups.

Dr. Mundy's most recent topics of research at GE were the integration of perceptual grouping and photometric theory with the goal of understanding 3-d textures. He also developed a Bayesian model-based approach to the segmentation of lung tissue in CT images.

He continued to foster basic research within his group at GE, including the work of Dr. Richard Hartley who made major contributions to the fundamental understanding of 3-d model reconstruction from multiple views.

His laboratory pioneered a new approach to constructing 3D models from satellite imagery based on a probabilistic volumetric algorithm this work lead to a best paper award from the American Society of Photogrammetry and Remote Sensing in 2011. He was also principal investigator on a number of military surveillance projects funded by DARPA, NGA and Lockheed Martin. He and his students contributed to an extensive C++ library for computer vision processing called VXL, which is still under active use and extension by the computer vision research community.

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### **Government-Sponsored Research Projects:**

Dr. Mundy received his first Defense Advanced Research Projects Agency (DARPA) grant in 1985, under DARPA's basic research program in image understanding (IU). The DARPA IU research community represents many of the leading university computer vision groups. Thus it was a significant recognition of his research achievements to be selected. His research has continued to be funded by DARPA through a number of competitive grant procurements.

From 1992-1996, he was a principal contributor to DARPA's RADIUS project, providing algorithms to the RADIUS Test bed System (RTS) that makes use of the context provided by a 3D site model. These algorithms include change detection based on various levels of image segmentation and specific object structure matching. He has continued the development of context-based change detection and image registration through the FOCUS program, which has continued to develop automated exploitation tools in a



site model framework. The FOCUS system has been successfully demonstrated on operational imagery in support of NIMA applications.

He was chairman of DARPA's Image Understanding Environment (IUE) Committee, which has specified and supervised the development of the IUE. The IUE is an extensive C++ hierarchy of computational structures in support of image understanding research programming. This object-oriented design was the first comprehensive study of the representations inherent in computer vision algorithms. This work led to special recognition by DARPA.

Dr. Mundy played a lead technical role in DARPA's Dynamic Database (DDB) program, an ambitious effort to automatically extract situation hypotheses from a continuous stream of imagery from a variety of sensors. He was responsible for the DDB object model to support the integration of algorithms supplied by many contractors. This model extended the IUE to incorporate reasoning about dynamic scenes.

He was principal investigator on a project to integrate natural language and computer vision in the analysis of video news sequences. This contract is supported by a newly formed government body called the Advanced Research and Development Agency (ARDA) that is focused on supporting research specifically aimed at the intelligence community.

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### **Professional Activities:**

Dr. Mundy's professional activities involve active participation in the areas of computer vision and image understanding over three decades. He has served on many program committees and review bodies including: International Conference on Computer Vision, Computer Vision and Pattern Recognition, International Joint Conference on Pattern Recognition and various SPIE conferences.

Some highlights:

- Co-chairman of the workshop on industrial applications of machine vision that resulted in a special issue of the IEEE Transactions on Pattern Analysis and Machine Intelligence (PAMI), 1980.
- Chairman, International Workshop on Geometric Reasoning, Oxford, 1986.
- Co-Chairman, International Workshop on the Integration of Symbolic and Numeric Computing, Saratoga 1990.
- Co-Chairman, 1st International Workshop on Geometric Invariants, Reykjavik, Iceland, 1991.

- Co-Chairman, 2nd International Workshop on Geometric Invariants, Ponta Delgada, Azores, 1993.
- Co-chairman of the IEEE workshop on Context-Based Vision held in conjunction with ICCV, Cambridge MA, 1995.

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- Co-chairman DARPA workshop on Shape, Contour and Grouping in Computer Vision, Palermo, Sicily, 1999.
- Co-chairman IEEE workshop on the Integration of Appearance and Geometry in Object Recognition, Fort Collins, CO, 1999.
- Member, Editorial Board, *IEEE Transactions on Pattern Analysis and Machine Intelligence* (PAMI) 1987-90
- Member, Editorial Board, *International Journal of Computer Vision*, 1989-present.
- Member, advisory board of NSF for artificial intelligence and robotics (IRIS) 1986-1998.
- Area Chair, 2001 Conference on Computer Vision and Pattern

#### **Honors and Awards:**

- Best paper award from the American Society of Photogrammetry and Remote Sensing in 2011.
- Co-recipient of the Marr Prize, 1993. The Marr Prize is awarded for the best paper at the International Conference on Computer Vision, and is considered a major honor in computer vision.
- Invited visitor to the Newton Institute of Mathematics at Cambridge University, summer 1993. Co-chaired a workshop at the Newton Institute on object recognition.
- Best Paper Award, British Machine Vision Conference, 1991.
- Invited keynote speaker, Swedish Conference on Computer Vision, 1980.
- Elected a Coolidge Fellow, 1987, General Electric's highest recognition for outstanding technical achievement.
- Best Paper Award, GE Symposium on Statistics, 1979.
- Best Paper Award, GE Symposium on Solid State Applications, 1976.

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- Eta Kappa Nu, honors fraternity.

**Publications**

a. Books

**Geometric Reasoning**, Kapur, D. and Mundy, J.L., editors, MIT Press, 1989.

**Symbolic and Numerical Computation for Artificial Intelligence**, Donald, B., Kapur, D., and Mundy, J.L., editors, Academic Press, 1992

**Geometric Invariance in Computer Vision**, Mundy, J.L., Zisserman, A. , MIT Press, 1992.

**Applications of Invariance in Computer Vision**, Mundy, J.L., Zisserman, A. and Forsyth D., editors, LNCS 825, Springer Verlag, 1994.

**Shape, contour and grouping in Computer Vision**, D. Forsyth, J. Mundy, V. Di Gesù, R. Cipolla, LNCS 1681, 1999.

b. Book Chapters

Automatic Visual Inspection, Mundy, J.L., in **Applications of Pattern Recognition**, K.S. Fu, Editor, CRC Press, 1982.

*Robotic Vision*, Mundy, J.L. in **Advances in Automation and Robotics**, Vol 1 pp 141-208, JAI Press, 1985.

*A Three Dimensional Sensor Based on Structured Light*, Mundy, J.L. and Porter, G.B, in **3D Vision**, edited by T. Kanade, 1987.

*Experiments in Using a Theorem Prover to Prove and Develop Geometrical Theorems in Computer Vision*, Mundy, J.L. and Swain, M., **Proc. IEEE Conference on Robotics and Automation**, p280, 1986.

Reprinted in **Readings in Computer Vision** M. Fischler and O. Ferschein, Eds., Morgan-Kaufmann, 1987.

*Industrial Machine Vision - Is It Practical?*, Mundy, J. L., in **Machine Vision, Algorithms, Architectures and Systems**, H. Freeman, Ed. Academic Press, 1988.

*Applications of Range Image Sensing and Processing*, in  
**Analysis and Interpretation of Range Images**, R.Jain and  
A.Jain Eds, Springer-Verlag, 1990.

*Applications of Invariant Theory in Vision*, Forsyth, D.A., Mundy, J.L., Zisserman, A. and  
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Intelligence**, Academic Press, 1992.

*Symbolic Representation of Object Models*, in  
**Active Perception and Robotic Vision**, A. Sood and H. Wexler Eds.,  
Springer Verlag, 1992.

*Object recognition in the geometric era: a retrospective*, in **Towards Category-level  
object recognition**, J. Ponce and M. Hebert and C. Schmid and A.Zisserman, eds.,  
Springer Verlag, 2007.

c. Refereed and invited articles

*Thermodynamical Systems Involving Magnetic Fields*, Mundy, J. and Newhouse, V.,  
**American Journal of Physics**, Vol. 34, 1966, p.1198.

*Multicrossover Cryotron - A High Gain Single Stage Amplifier*, Mundy, J.L. and  
Newhouse, V., Joynton, R.E. and Meicklejohn, W., **Review of Scientific  
Instruments**, Vol. 38, 1967, p.798.

*A New Cryogenic Memory System*, Mundy, J.L. and Newhouse, V., **IEEE  
Transactions on Magnetics**, Vol. MAG-4, 1968, p.705.

*Direct Measurement of Strain on  $T_c$  in Thin Films*, Mundy, J.L. and Friday, B.,  
**Journal of Applied Physics**, Vol. 40, 1969, p. 2162.

*Shortening in MOS Transistors during Junction Walk-Out*, Neugebauer, C., Burgess, J.,  
Joynton, R.E. and Mundy, J.L., **Applied Physics Letters**, Vol. 19, 1971, p. 287.

*Eliminating Threshold Losses in MOS Circuits by Varactor Bootstrapping*, Joynson, R.E., Mundy, J.L., Burgess, J. and Neugebauer, C., **Proc. IEEE**, Vol. 59, 1971 p.1365.

*Eliminating Threshold Losses in MOS Circuits by Bootstrapping Using Varactor Coupling*, Joynson, R.E., Mundy, J.L., Burgess, J. and Neugebauer, C. **IEEE Journal of Solid State Circuits**, Vol SC-7, 1972, p. 217.

*Low Cost Associative Memory*, Mundy, J.L, Burgess, J., Joynson, R.E., Neugebauer, C., **IEEE Journal of Solid State Circuits**, Vol. SC-7, p364, 1972.

*The Application of Unitary Transforms to Visual Pattern Recognition*, Mundy, J.L. and Joynson, R.E., **Proc. 1st International Joint Conference on Pattern Recognition**, p390, 1973.

*A Line Description System Based on Hadamard Features*, Joynson, R.E., Mundy, J.L., and Banerji, R., **Proc. 2nd International Joint Conference on Pattern Recognition**, p204, 1974.

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*Automatic Visual Inspection Using Syntactic Analysis*, Mundy, J.L. and Joynson, R.E., **Proc. IEEE Conference on Pattern Recognition and Image Processing**, p144, 1977.

*Web Representation of Image Data*, Hsu, S. and Mundy, J.L.,  
**Proc. 4th International Joint Conference on Pattern Recognition**, p 675, 1978.



*Automatic Visual Inspection of Blind Holes in Metal Surfaces*, Porter, G.B., Cipolla, T.M. and Mundy, J.L., **Proc IEEE Conference on Pattern Recognition and Image Processing**, p83, 1979.

*Regionization of Image Data Using Surface Approximation*, Hsu, S. and Mundy, J.L., **Proc IEEE Conference on Pattern Recognition and Image Processing**, p314, 1979.

*Visual Inspection of Metal Surfaces*, Mundy, J.L. and Porter, G.B. **Proc. 5th International Joint Conference on Pattern Recognition**, p232, 1980.

*Parameter Selection of Network Approximation of Images*, Hsu, S. and Mundy, J.L., **Proc. 5th International Joint Conference on Pattern Recognition**, p943, 1980.

*A Table Driven Visual Inspection Module*, Porter, G. and Mundy, J.L., **Proc. 1st Symposium of Robotic Research**, Bretton Woods, 1983.

*Reasoning About Three Dimensional Space*, Mundy J.L., **Proc. IEEE International Conference on Robotics and Automation**, 1985.

*Reasoning About 3-D Space With Algebraic Deduction*, Mundy, J.L., **Proc. 3rd International Symposium on Robotics Research**, p117, 1986.

*3D Object Recognition From an Unconstrained Viewpoint*, Thompson, D. and Mundy, J., **Proc. IEEE Conf. on Robotics and Automation**, April, 1987.

*Model-Based Motion Analysis - Motion From Motion*, Thompson, D. and Mundy, J., **Proc. 4th International Symposium on Robotics Research**, p. 299, 1987.

*Matching from 3-d Range Models into 2-d Intensity Scenes*, Connoly, C.I., Mundy, J.L., Stenstrom, R. and Thompson, D. **Proc. 1st International Conference on Computer Vision**, 1987.

*Wu's Method and Its Application to Perspective Viewing*, Kapur, D. and Mundy J., **Artificial Intelligence**, Vol. 37, p.15, Dec. 1988.

*A Multi-Level Geometric Reasoning System For Vision*, **Artificial Intelligence**, Barry, M. and Mundy, J., Vol. 37, p. 275, Dec. 1988.

*Projectively Invariant Representations Using Implicit Algebraic Curves*, Rothwell, C. , Forsyth, D., Mundy, J. and Zisserman, A., **Proc. 1st European Conference on Computer Vision**, p. 427, 1990.

*Benchmark Evaluation of a Model-Based Object Recognition System*, Heller A. and Mundy, J.L. **Proc. 3rd International Conference on Computer Vision**, p. 268, 1990.

*Invariance - A New Framework for Vision*, Forsyth, D., Mundy, J.L., Zisserman, A. and Brown, C., **Proc. 3rd International Conference on Computer Vision**, , p. 268, 1990.

*Relative Motion and Pose from Invariants* , Zisserman, A., Marinos, C., Forsyth, D., Mundy J.L. and Rothwell, C.A., **Proc. British Machine Vision Association Conference**, 1990.

*Projectively Invariant Representations Using Implicit Algebraic Curves*, Forsyth, D., Mundy, J.L., Zisserman, A. and Brown, C., **Image and Vision Computing**, 9, 2, 130-136, 1991.



*Modeling Polyhedra with Constraints*, J.L. Mundy **Proc. Computer Vision and Pattern Recognition**, p479, 1991.

*Invariant Descriptors for 3D Object Recognition and Pose* **IEEE Trans. on Pattern Analysis and Machine Intelligence**, p.971, Oct., 1991

*Projectively Invariant Representations Using Implicit Algebraic Curves*, **Image and Vision Computing**, Vol. 9, No. 2, p. 130, 1991.

*Transformational Invariance - a Primer*, Forsyth, D., Mundy, J.L. and Zisserman, A., **Image and Vision Computing**, 10, 1992

*Recognizing Rotationally Symmetric Surfaces From Their Outlines*, **Proc. European Conference on Computer Vision**, p.639, 1992.

*Template Guided Visual Inspection*, Noble, A., Nguyen, V.D., Marinos, C., Tran, A.T., Farley, J., Hedengren, K and Mundy, J., **Proc. European Conference on Computer Vision**, p. 893, 1992.

*An Object-Oriented Approach to Template-Guided Visual Inspection*, Mundy, J., Noble, A., Marinos, C., Nguyen, V.D. , Heller, A. Farley, J. and Tran, A.T., **Proc. Computer Vision and Pattern Recognition**,  
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*Efficient recognition of rotationally symmetric surface and straight homogeneous generalized cylinders*, **Proc. Computer Vision and Pattern Recognition**, 1993.

*Extracting Projective Structure From Single Perspective Views of 3D Pointsets*, Rothwell, C. Zisserman, A. Forsyth, D. and Mundy, J.L., **Proc. 4th International Conference on Computer Vision**, 1993.

*Planar Object Recognition Using Projective Shape Representation*, C.A. Rothwell, A. Zisserman, D.A. Forsyth, J.L. Mundy, **International Journal of Computer Vision**, 16, 1995, invited.

*Toward Template-Based Tolerancing from a Bayesian Viewpoint*, Noble, J.A. and Mundy, J.L. **Proc. Computer Vision and Pattern Recognition**, 1993.

*Applications of Computer Vision*, Grimson, W.E.L and Mundy, J.L., **Comm. ACM**, 37, 45-51, 1994, invited.

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*Driving Vision by Topology*, C. Rothwell, J. Mundy, W. Hoffman, and V.-D. Nguyen, In **Proceedings IEEE Symposium on Computer Vision**, 1995

*3D Object Recognition Using Invariance*, Zisserman, A., Forsyth, D., Mundy, J.L., Rothwell, C., Liu, J., **Special Issue on Computer Vision, Artificial Intelligence**, 1995.

*The Image Understanding Environment Program*, J.L. Mundy and the IUE Committee, **IEEE Expert/Intelligent Systems & Their Applications**, 1995, invited.

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*An Experimental Comparison of Appearance and Geometric Model Based Recognition*, J. Mundy and A. Liu and N. Pillow and A. Zisserman and S. Abdallah and Sven Utcke and S. Nayar and C. Rothwell, **Proceedings International Workshop on Object Representations in Computer Vision**, 1996

*Object Recognition Based on Geometry: Progress over Three Decades*, J.L. Mundy, **Philosophical Transactions:Mathematical, Physical and Engineering Sciences, of the Royal Society**, Vol 356, pp 1213-1231, 1998, invited.

*An Integrated Boundary and Region Approach to Perceptual Grouping*, A. Hoogs and J.L. Mundy, **Proc. International Conf on Pattern Recognition**, 2000, p 284.

*A Common Set of Perceptual Observables for Grouping Figure-Ground Discrimination and 3-d Texture Classification*, A. Hoogs, R. Collins, R. Kaucic and J. Mundy, **IEEE Transactions on Pattern Analysis and Machine Intelligence**, April 2003.

*A Probabilistic Approach to Nano-computing*, J. Chen, J. Mundy, Y. Bai, S. M. Chan, P. Petrica and I. R. Bahar, **IEEE Workshop on Non-silicon Computing**, San Diego, CA, 2003.

*A Probabilistic-based Design Methodology for Nanoscale Computation*, I. R. Bahar, J. Mundy and J. Chen, **IEEE ICCAD**, San Jose, CA, Nov. 2003.

*A Probabilistic-based Design Methodology for Nanoscale Computer Architecture*, J. Chen, J. Mundy, and I. R. Bahar, **International Workshop on Logic and Synthesis**, Laguna Beach, CA, May 2003.

*Object Recognition in the Geometric Era: A Retrospective*, J. Mundy, **International Workshop on Recognition and Learning**, Sicily Italy, Sept. 2003.

*Video Surveillance Research in Support of Port Security*, J. Mundy, **IEEE Homeland Security Technology Workshop**, Warwick RI, Nov. 2003.

*Figure-ground Segmentation and Object Tracking in Video using Curve Matching*, V. Jain, B. Kimia and J. Mundy, **Proc. European Conference on Computer Vision**, Workshop on Spatial Coherence in Visual Motion Analysis, May 2004.

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*Fusion of intensity, texture, and color in video tracking based on mutual information*, J. Mundy and C-F. Chang, **Proc. IEEE Conf. AIPR**, 2004.

*A Probabilistic-Based Design for Nanoscale Computation*, Chapter 5 in, **Nano, Quantum and Molecular Computing: Implications to High Level Design and Validation**, R. I. Bahar, J. Chen, and J. Mundy, S. Shukla and R.I. Bahar, eds, Kluwer Academic Publishers, 2004

*Designing Logic Circuits for Probabilistic Computation in the Presence of Noise*, K. Nepal , R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky, **IEEE/ACM Design Automation Conference**, June 2005.

*Designing MRF based Error Correcting Circuits for Memory Elements*, K. Nepal , R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky, **IEEE/ACM Design Automation and Test in Europe Conference**. to appear March 2006.

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MRF Reinforcer: A Probabilistic Element for Space Redundancy in

Nanoscale Circuits," IEEE MICRO, Vol. 26, No. 5, September/October 2006., pp. 19–27.

*Designing Nanoscale Logic Circuits based on Markov Random Fields*, K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky,

**Journal of Electronic Testing: Theory and Applications**, accepted for publication.

*Designing MRF based Error Correcting Circuits for Memory Elements*, K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky,

**IEEE/ACM Design Automation and Test in Europe Conference**,

March 2006, interactive presentation. Acceptance rate approx. 25%

*A Model for Soft Errors in the Subthreshold CMOS Inverter*, H. Li, J. Mundy, W. Patterson, D. Kazazis, A. Zaslavsky and R. I. Bahar, **Workshop on**

**SELSE 2, System Effects of Logic Soft Errors**, April 2006.

,

*Optimizing Noise-Immune Logic Circuits using Principles of Markov Random Fields*, K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky,

**IEEE/ACM Great Lakes Symposium on VLSI**, May 2006. Acceptance rate approx. 30%.

*Techniques for MRF based implementation of multi-level combinational*

*circuits*, K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky,

**IEEE Workshop on Defect and Fault Tolerant Nanoscale Architectures (NANOARCH 2006)**, held in conjunction with the

International Symposium on Computer Architecture, June 2006.



*Techniques for Designing Noise-Tolerant Multi-level Combinational Circuits*, K. Nepal, R. I. Bahar, J. Mundy, W. R. Patterson, and A. Zaslavsky,

**IEEE/ACM Design Automation and Test in Europe Conference,**

April 2007 Acceptance rate approx. 25%

*Learning Background and Shadow Appearance with 3-D Vehicle Models*, M. J. Leotta and J. L. Mundy. **Proc. British Machine Vision Conference (BMVC)**. Sept 2006. Vol 2, pp. 649-658

*Automated Change Detection Based on Multi-modal Fusion*, Pollard, T. , Mundy, J. L., Cooper, D., **Proc. National Geospatial Intelligence Agency Symposium, Proc.**, October, 2006.

*Automated Change Detection Based on*

*Multi-modal Fusion*, Pollard, T. , Mundy, J. L., Cooper, D. **Intelligence Agency Academic Summit, Proc.**, June ,2007.

*Epipolar Curve Tracking in 3-D.*, M. J. Leotta and J. L. Mundy.

In **IEEE International Conference on Image Processing 2007 (ICIP)**.

Sept 2007. Vol. 6, pp. 325-328

*Thermally-induced soft errors in nanoscale CMOS circuits* ,Li, H. Mundy, J. Patterson, W. Kazazis, D. Zaslavsky, A. Bahar, R. I. ,

**IEEE International Symposium on Nanoscale Architectures, NANOSARCH**, Oct. 2007

*Change detection in a 3-d world*, T. Pollard and J. Mundy.. In **Proc. IEEE Computer Vision and Pattern Recognition Conference**, June 2007.

*Automated Change Detection Based on Multi-modal Fusion (Geospatial Registration) ,"* Eden, I , Mundy, J. L., Cooper, D. , **Intelligence Agency Academic Summit**, Proc., June ,2008.

*Image and Video Registration in a 3-d World*, Mundy, J.L., **Proc. NGA Geopositioning Workshop**, August, 2008.

*Parallax-Free Video Registration*, Crispell, D., Mundy, J. and Taubin, G., **Proc. British Machine Vision Conf.**, Sept. 2008.

*Automated Change Detection Based on Multi-modal Fusion*, Mundy, J.L., Invited Keynote Address at **United States Geospatial Intelligence Foundation Symposium**, October, 2008.

*Lie Group distance based generic 3-d Vehicle Classification*, Yarlagadda, P. Ozcanli, O., Mundy, J.L., **Proc. International Conference on Pattern Recognition**, December, 2008.

*NorMaL: Non-compact Markovian Likelihood for Change Detection*, Sezer, O., Mundy, J.L., Altunbasak, Y. and Cooper, D., **Proc. International Conference on Pattern Recognition**, December, 2008.

*Markov Chain Analysis of Thermally Induced Soft Errors in Sub-threshold Nanoscale CMOS Circuits*, Sabou, F., Kazazis, D. Bahar, R., Mundy, J., Patterson, W., Zaslavsky, A. **IEEE Transactions on Device and Materials Reliability**, to appear 2010.

*A Volumetric Approach to Change Detection in Satellite Images*, Pollard, T. , Eden, I. , Mundy, J. , and Cooper, D. , **Photogrammetric Engineering and Remote Sensing Journal**, to appear 2010.

*Uncertain Geometry: A New Approach to Modeling for Recognition*,

Mundy, J.L., Ozcanli, O.C., **Proceedings of SPIE Defense, Security and Sensing Conference**, April 2009. (Received Automatic Target Recognition (ATR) 2009 Best Paper Award)

Predicting High Resolution Image Edges with a Generic, Adaptive, 3-D Vehicle Model, Leotta, M. J., Mundy, J. L. , **Proc. IEEE Computer Vision and Pattern Recognition Conference**, June 2009. pp 1311-1318

*Vehicle Recognition as Changes in Satellite Imagery*, Ozcanli, O., Mundy, J.L., **Proc. International Conference on Pattern Recognition(ICPR)**, 2010

*Vehicle Surveillance with a Generic, Adaptive, 3-D Vehicle Model*, Leotta, M. , Mundy, J.L., **IEEE Transactions on Pattern Analysis and Machine Intelligence**, Nov. 2010. <http://www.computer.org/portal/web/csdl/doi/10.1109/TPAMI.2010.217>

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*Full Two-Dimensional Markov Chain Analysis of Thermal Soft Errors in Subthreshold Nanoscale CMOS Devices*, Jannaty, P. , Sabou, F. Bahar, I. Mundy, J. , Patterson, W., Zaslavsky, A., **IEEE Transactions on Device and Materials Reliability**, 2010.

*Two-Dimensional Markov Chain Analysis of Radiation-Induced Soft Errors in Subthreshold Nanoscale CMOS Devices*, Jannaty, P. , Sabou, F. C., Gadlage, M. Bahar, R. I. , Mundy, J., Patterson, W., Reed, R. A., Weller, R. A., Schrimpf, R., and D. Zaslavsky, A., **IEEE Transactions on Nuclear Science**, Volume:57, Issue:6, pp. 3768-3774., Dec. 2010.

*Shot-Noise-Induced Failure in Nanoscale Flip-Flops—Part I: Numerical Framework*, Jannaty, P., Sabou, F. C., Son T. Le, Donato, M. , Bahar, R. I. , Patterson, W., Mundy, J., Zaslavsky, A. , **IEEE Transactions on Electron Devices**, Vol. 59, No. 3, March 2012, pp. 800-806.

*Shot-Noise-Induced Failure in Nanoscale Flip-Flops—Part II: Failure Rates in 10nm Ultimate CMOS*, Jannaty, P., Sabou, F. C., Son T. Le, Donato, M. , Bahar, R. I. , Patterson, W., Mundy, J., Zaslavsky, A., **IEEE Transactions on Electron Devices**, Vol. 59, No. 3, March 2012, pp. 807-812.

*Full Two-Dimensional Markov Chain Analysis of Thermal Soft Errors in Subthreshold Nanoscale CMOS Devices*, Jannaty, P., Sabou, F. C., Son T. Le, Donato, M. , Bahar, R. I. , Patterson, W., Mundy, J. ,Zaslavsky, A., Jannaty, P. , Sabou, F. Bahar, I. Mundy, J. , Patterson, W., Zaslavsky, A., **IEEE Transactions on Device and Materials Reliability**, Vol. 11, No. 1, March 2011, pp. 50-59. DOI link: 10.1109/TDMR.2010.2069100

*A Noise-Immune Sub-Threshold Circuit Design Based on Selective use of Schmitt-Trigger Logic*, Donato, M., Cremona, F. , Jin, W., Bahar, R. I. , Patterson, W. , Zaslavsky, A., Mundy, J. , **ACM Great Lakes Symposium on VLSI**, May 2012. Regular paper.

*Designing, Fabricating, and Testing Noise Immune Circuits*, Donato, M. , Jannaty, P. , Nepal, K. , Bahar, R. I. , Mundy, J. , Patterson, W. R. , and Zaslavsky, A. , **2011 Subthreshold Microelectronics Conference** , Sept. 2011.

*Designing Noise-Immune CMOS Circuits for Sub-Threshold Operation Using Schmitt-Trigger Logic*, Donato, M., Nepal, K. , Bahar, R. I. , Patterson, W. , Zaslavsky, A., Mundy, J. , **IEEE North Atlantic Test Symposium**, May 2011.

Object Recognition in Probabilistic 3D Volumetric Scenes, Restrepo, M.I, Mayer, B.A, and Mundy, J.L., **International Conference of Pattern Recognition Application and Methods** (ICPRAM), February 2012

*High Resolution Surveillance Video Compression using JPEG2000 Compression of Random Variables* , Biris, O. and Mundy, J.L., **International Conference on Computer Vision Theory and Applications** (VISAPP), February, 2012.

Restrepo, M. I., and Mundy, J. L. , "An Evaluation of 3-d Local Descriptors in Probabilistic Volumetric Scenes", **British Machine Vision Conference**, Guilford, UK, Sept. 2012

Restrepo, M. I., Mayer, B. A. , Ulusoy, A. O., and Mundy, J. L., "Characterization of 3-d Volumetric Probabilistic Scenes for Object Recognition.", **IEEE Journal of Selected Topics in Signal Processing**, vol. 6, issue Emerging Techniques in 3-D, pp. 522-537, Sept. 2012

Calakli, F., A. O. Ulusoy, M. I. Restrepo, Mundy, J. L. and Taubin, G., "High Resolution Surface Reconstruction from Multi-view Aerial Imagery", **3D Imaging Modeling Processing Visualization Transmission** (3DIMPVT), Oct. 2012.

Ulusoy, A.O. and Mundy, J.L., "Dynamic Probabilistic Volumetric Models," Proc. **International Conference on Computer Vision**, Dec. 2013.

Mayer, B. and Mundy, J., "Duration Dependent Codebooks for Change Detection," Proc. **British Machine Vision Conference**, Sept. 2014.

Ulusoy, A.O. and Mundy, J.L., "Image-Based 4-d Reconstruction Using 3-d Change Detection," **Proc. European Conference on Computer Vision**, Sept. 2014

Ozcanli, O.C. Dong,Y., Mundy, J.L., Webb,H., Hammoud, R., Tom V., "Automatic Geolocation Correction of Satellite Imagery," **International Journal of Computer Vision (IJCV)**, Volume 116, Issue 3, pp 263-277, 2016.



Biris, O., Ulusoy, A.O. and Mundy J.L, "Compression of Probabilistic Volumetric Models using multi-resolution scene flow," **Image and Vision Computing**, vol. 64, pp. 79-89, 2017.

Crispell, D., Biris, O., Crosswhite, N., Byrne, J., Mundy, J.L., "Dataset Augmentation for Pose and Lighting Invariant Face Recognition," **Proc. IEEE Applied Imagery Pattern Recognition Workshop (AIPR)**, 2017.

**Consultancies:**

**July 2003 – March 2004**

Consultant to the Defense Advanced Projects Agency (DARPA)  
Study of the application of three-dimensional light radar scanning to urban warfare reconnaissance

**Approx Sept. 2001 – 2009**

Expert Defense Witness for Brown Rudnick Berlack Israels LLP  
Plaintiff Scanner Corp, Defendant Icos Corp. Testified in trial (judge only)  
Technology: 3-d measurement of ball grid arrays

**Approx. 2002- 2004**

Expert Defense Witness for Foley Hoag LLP  
Plaintiff Cognex Corp, Defendant Electro Scientific Industries Inc.  
Technology: Recognition and placement of surface-mounted devices

**Sept. 2003 – Dec. 2003**

Technical Expert for Foley Hoag LLP  
Plaintiff Pourchez Corp., Defendant, Diatek Corp.  
Scientific analysis of dialysis catheter geometry using computer vision

**Jan. 2003 – 2010**

Contractor to Lockheed Martin Corporation  
Technology: Automated vehicle tracking from aerial platforms, change detection from reconnaissance imagery, high throughput video processing on airborne platforms

**Jan. 2005 – Present**

Technical Expert for August Technology Corporation, and Rudolph Technologies, Inc., plaintiff against Camtek LTD, inspection of semiconductor devices. Testified in jury trial.

**Jan. 2006 – 2008**

Consultant to Toyon Research Corporation of Santa Barbara  
Technology: Automated target recognition from infrared imagery.

**Jan. 2009 – 2012**

Consultant to Defense Advanced Projects Agency (DARPA) Transparent Earth Initiative

**Jun. 2009 – May. 2010**

Technical Expert for Fuji Inc. and MVTec Software GmbH defendant against Cognex Inc. plaintiff, detection of patterns on electronic semiconductor devices, testified before the ITC.

**Nov. 2010 – Jan. 2011**

Patent prior art analysis for Crowell and Moring on computer image generation.

**Sept. 2012 – Jan. 2013**

Technical Expert for Microsoft and other defendants, *Transcenic v Microsoft et al* . Technology involves generating synthetic street views based on human interaction.

**Dec. 2014 – Oct. 2017** Technical Expert for the defendant LG Electronics, *Advanced Micro Devices vs. LG Electronics* Technology involves computer user interfaces based on recognition of gestures as captured by a video camera.

**Mar. 2016 – Present** Technical Expert for the defendant *Xactware Solutions, Inc. and Verisk Analytics, Inc., vs. Eagle View Technologies, Inc. and Pictometry International Corp.* The technology involves interactive 3D modeling of roof structures from aerial imagery.

**Dec. 2017 – Present** Technical Expert for the plaintiff *Carl Zeiss AG and ASML Netherlands B.V. v. Nikon Corporation, Sendai Nikon Corporation, and Nikon Inc.* The technology involves automated face detection and tracking by cameras.

**Nov. 2017 – Present** Technical Expert for the defendant *Exocad GMBH and Exocad America, Inc. v. 3Shape A/S*, Inter Partes Review. The technology involves synthetic rendering of dental repair and augmentation applied to a facial model of the patient.



**PHILIP GREEN**


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<b>POSITION</b>	Principal of Hoffman Alvary & Company LLC  Phone: (617) 209-5106 philgreen@hoffmanalvary.com
<b>EDUCATION</b>	B.A., History, 1984 – Rutgers College M.B.A., Accounting, 1987 – Rutgers Graduate School of Management
<b>PROFESSIONAL AND BUSINESS HISTORY</b>	1996 – Present: Principal Hoffman Alvary & Company LLC, Newton, MA  1994 – 1996: Price Waterhouse LLP, Manager/Senior Manager, Dispute Analysis and Corporate Recovery Services, New York  1988 – 1994: Executive Consultant, Peterson Consulting Limited Partnership, New York  1987 – 1988: Staff Accountant, Ernst & Whinney, New York  1984 – 1985: Paralegal, Anderson, Russell, Kill & Olick, Washington, D.C. and New York  <u>Dispute Analysis Consulting</u> – Accounting, financial analysis, and valuation assistance in connection with litigated matters focusing on intellectual property infringements, contract breaches, professional malpractice and investigations before the International Trade Commission. Work has included the calculation of lost profits and reasonable royalty damages, forensic and investigative accounting, valuation, opinions regarding commercial success and the evaluation of domestic industry and remedy issues. This assistance has been provided to a broad range of industries including: computer software and hardware, telecommunications and electronics companies, pharmaceutical, medical device, and biotechnology entities, and steel, glass and other manufacturers. Served as expert witness on damages, royalties, valuation and accounting-related issues.  <u>Other Consulting</u> – Engagements related to intangible assets have included preparation of valuations in connection with purchases, sales and donations, royalty auditing and development of patent and intellectual property licensing strategies. Other consulting assistance has included business valuations, providing opinions on the “fairness” of compensation in transactions, and assistance with issues related to bankrupt or troubled companies.
<b>PROFESSIONAL AND BUSINESS AFFILIATIONS</b>	Certified Public Accountant – Registered to Practice by the State of New York Certified Management Accountant Accredited in Business Valuation by the AICPA Accredited Senior Appraiser – Business Valuation Member, American Institute of Certified Public Accountants Member, New York State Society of Certified Public Accountants Member, Institute of Certified Management Accountants Member, American Society of Appraisers Member, Licensing Executive Society

**Philip Green**

**Testimony – January 2013 – Present**

\*Smartphone Technologies LLC v. Apple Inc. and LG Electronics, Inc., Federal Court – Eastern District of Texas – Deposition

\*Endo Pharmaceuticals, Inc. v. Mylan Pharmaceuticals, Inc., Federal Court – District of Delaware – Deposition

\*Galderma Laboratories Inc. et al. v. Amneal Pharmaceuticals LLC et al., Federal Court – District of Delaware – Deposition

\*Ventria Bioscience v. Daichang Yang, Superior Court – Sacramento County California – Deposition

\*Certain Electronic Devices, Including Wireless Communication Devices, Tablet Computers, Media Players, and Televisions, and Components Thereof, Investigation No. 337-TA-862, International Trade Commission – Deposition and Hearing before Judge Shaw

\*Alcon Pharmaceuticals LTD et al. v. Apotex Inc. et al., Federal Court – District of Delaware – Deposition

\*GeoTag, Inc. v. Frontier Communications Corp. et al., Federal Court – Eastern District of Texas – Deposition

Paige Landscape Company, Inc. v. Apple D'Or Maintenance, Inc., Superior Court – Worcester County Massachusetts – Trial

\*Certain Wireless Communication Base Stations and Components Thereof, Investigation No. 337-TA-871, International Trade Commission – Deposition

\*Google, Inc. v. GeoTag, Inc., Federal Court – District of Delaware – Deposition

\*Ethox Chemicals LLC v. The Coca-Cola Company, Federal Court – District of South Carolina – Deposition

\*Columbia Data Products, Inc. v. Autonomy Corporation Limited et al., Federal Court – District of Massachusetts – Deposition

\*Mass Engineered, Inc. v. Humanscale, Inc., Federal Court – Eastern District of Virginia – Deposition

\*Ascion LLP et al. v. Rouey Lung, Inc. et al., Federal Court – District of Massachusetts – Trial before Judge O'Toole

\*Cheese Systems Inc. v. Tetra Pak Cheese & Powder Sys., Inc. et al., Federal Court – Western District of Wisconsin – Trial before Judge Crabb

\*Certain Point-to-Point Network Communication Devices and Products Containing Same, Investigation No. 337-TA-892, International Trade Commission – Deposition

\* Denotes matter involving intellectual property



\*In the Matter of a Plan of Compromise or Arrangement of Nortel Networks Corporation et al., Ontario Superior Court of Justice and United States Bankruptcy Court for the District of Delaware – Deposition and Trial

\*GeoTag, Inc. v. Starbucks Corp. et al., Federal Court – Eastern District of Texas – Deposition

\*B. Ravo and E. Nicolo v. Covidien LP, Federal Court – Western District of Pennsylvania – Deposition

\*Trebro Manufacturing, Inc. v. FireFly Equipment, LLC, Federal Court – District of Montana – Deposition

Finn v. Ballentine Partners LLC, American Arbitration Association – Deposition and Hearing before three judge panel

\*BioMarin Pharmaceutical, Inc. v. Duke University, United States Patent Trial and Appeal Board – Declaration and Testimony via Deposition

\*Amneal Pharmaceuticals LLC v. Supernus Pharmaceuticals, Inc., United States Patent Trial and Appeal Board – Declaration and Testimony via Deposition

\*GeoTag, Inc. v. AT&T Mobility, LLC et al., Federal Court – Northern District of Texas – Deposition

\*Accusoft Corporation v. Quest Diagnostics, Inc. and Medplus, Inc., Federal Court – District of Massachusetts – Deposition

\*Target Corp. v. Destination Maternity Corp., United States Patent Trial and Appeal Board – Declaration and Testimony via Deposition

Stockholder Representatives for Interlace Medical, Inc. v. Hologic, Inc., Chancery Court for the State of Delaware – Deposition and Trial

\*Adaptix, Inc. v. LG Electronics, Pantech Wireless, Inc., AT&T Mobility LLC, Verizon Wireless et al., Federal Court – Eastern District of Texas – Deposition

\*Adaptix, Inc. v. Apple, Inc., HTC Corporation, AT&T Mobility LLC, Verizon Wireless et al., Federal Court – Northern District of California – Deposition

\*Adaptix, Inc. v. Ericsson, Inc., AT&T Mobility LLC, T-Mobile USA, Inc. et al., Federal Court – Eastern District of Texas – Deposition

\*Adaptix, Inc. v. Alcatel-Lucent USA, Inc., AT&T Mobility LLC, Verizon Wireless, Sprint Spectrum LP et al., Federal Court – Eastern District of Texas – Deposition and Trial before Judge Schroeder

\*Cell and Network Selection LLC v. ZTE (USA), Inc., MetroPCS Communications, Inc. et al., Federal Court – Eastern District of Texas – Deposition

Glenridge Pharmaceuticals, LLC v. Questcor Pharmaceuticals, Inc., Superior Court, Santa Clara County California – Deposition

\* Denotes matter involving intellectual property

\*Quiksilver, Inc. et al. v. Rox Volleyball, Inc. et al., Federal Court – Central District of California – Deposition and Trial before Judge Guilford

\*U.S. Bancorp v. Solutran, Inc., United States Patent Trial and Appeal Board – Declaration and Testimony via Deposition

\*EMC Corporation, et al. v. Zerto, Inc., Federal Court – District of Delaware – Deposition and Trial before Judge Sleet

\*Certain Consumer Electronics and Display Devices with Graphics Processing and Graphics Processing Units Therein, Investigation No. 337-TA-932, International Trade Commission – Deposition

\*Certain Footwear Products, Investigation No. 337-TA-936, International Trade Commission – Deposition

\*HSM Portfolio LLC and Technology Properties Limited, LLC, v. Micron Technology, Inc., Federal Court – District of Delaware – Deposition

\*Greatbatch, Inc. v. AVX, Inc., Federal Court – District of Delaware – Deposition and Trial before Judge Stark

\*Speedfit LLC v. Woodway, Inc., Federal Court – Eastern District of New York – Deposition

\*Beverage Dispensing Solutions, LLC v. The Coca-Cola Company, Federal Court – District of Georgia – Deposition

\*Callwave, Inc. v. Broadsoft, Inc., Federal Court – District of Delaware – Deposition

\*Callwave, Inc. v. Google, Inc., Federal Court – District of Delaware – Deposition

\*SNMPRI, Inc. v. Avaya, Inc., Federal Court – District of Delaware – Deposition

\*Bombardier Recreational Products, Inc. v. Arctic Cat, Inc., Federal Court – District of Minnesota – Deposition and Trial before Judge Tunheim

\*Brigham & Women's Hospital and Investors Bio-Tech LLC v. Perrigo, Inc., Federal Court – District of Massachusetts – Deposition and Trial before Judge Zobel

\*AngleFix LLC v. Wright Medical Products, LLC, Federal Court – Western District of Tennessee – Deposition

\*Cellular Communications Equipment LLC v. Apple Inc., AT&T Mobility LLC, Verizon Communications, Inc., Cellco Partnership d/b/a Verizon Wireless, Sprint Corporation, Sprint Solutions, Inc., Sprint Spectrum LP, Boost Mobile, LLC, T-Mobile USA, Inc., and T-Mobile US, Inc., Federal Court – Eastern District of Texas – Deposition and Trial before Judge Mitchell

\*Cellular Communications Equipment LLC v. HTC Corporation, ZTE Corporation, Exedea, Inc., AT&T Mobility LLC, Cellco Partnership Inc. d/b/a Verizon Wireless, Sprint Solutions, Inc., Sprint Spectrum LP, Boost Mobile, LLC, T-Mobile USA, Inc., and T-Mobile US, Inc., Federal Court – Eastern District of Texas – Deposition

\* Denotes matter involving intellectual property

NaviSite, Inc. v. CareOne Management, LLC and Partners Pharmacy Services, Superior Court – Suffolk County Massachusetts – Deposition

Protect-A-Car Wash Systems, Inc. v. Car Wash Partners, Inc., MCW Inc., and John L. Lai, Federal Court – Northern District of Maryland – Deposition

NetScout Systems, Inc. v. Gartner, Inc., Superior Court – Judicial District of Stamford/Norwalk, Connecticut – Deposition

\*Solutran, Inc. v. U.S Bank et al., Federal Court – District of Minnesota – Deposition and Trial before Judge Nelson

\*TPI, Inc. v. Facebook, Inc., Federal Court – District of Massachusetts – Deposition

\*Certain Mobile and Portable Electronic Devices Incorporating Haptics (Including Smartphones and Laptops) and Components Thereof, Investigation No. 337-TA-1004/990, International Trade Commission – Deposition and Hearing before Chief Judge Bullock

\*Certain Access Control Systems and Components Thereof, Investigation No. 337-TA-1016, International Trade Commission – Deposition and Hearing before Judge Pender

\*Malibu Boats, LLC v. MasterCraft Boat Company, LLC, Federal Court – Eastern District of Tennessee – Deposition

\*Chapco, Inc. and Samsara Fitness, LLC v. Woodway USA, Inc., Federal Court – District of Connecticut – Deposition

\*Zoetis LLC et al. v. Roadrunner Pharmacy, Inc., Federal Court – District of New Jersey – Deposition

\*IPS Group, Inc. v. Duncan Parking Solutions, Inc. et al., Federal Court – Southern District of California – Deposition

\*Certain Hybrid Electric Vehicles and Components Thereof, Investigation No. 337-TA-1042, International Trade Commission – Deposition and Hearing before Judge Shaw

\*Pacific Packaging Products, Inc. v. Packing Partners, LLC et al., Superior Court – Middlesex County Massachusetts – Deposition

In re Namenda Direct Purchaser Antitrust Litigation, Federal Court – Southern District of New York – Deposition

\*Certain Dental Ceramics, Products Thereof, and Methods of Making the Same, Investigation No. 337-TA-1050, International Trade Commission – Deposition

\*DSM IP Assets, B.V. et al. v. Lallemand Specialties, Inc. & Mascoma LLC, Federal Court – Western District of Wisconsin – Deposition and Trial before Judge Conley

\*Cellular Communications Equipment LLC v. HTC Corporation, HTC America, Inc., ZTE (USA), Inc., Federal Court – Eastern District of Texas – Deposition

Concordia Pharmaceuticals Inc., S.À.R.L. v. Winder Laboratories, LLC, and Steven Pressman, Federal Court – Northern District of Georgia – Deposition

\* Denotes matter involving intellectual property

\*Eagle View Technologies, Inc. v. Xactware Solutions, Inc., and Verisk Analytics, Inc., Federal Court – Northern District of New Jersey – Deposition

\*Certain Color Intraoral Scanners and Related Hardware and Software, Investigation No. 337-TA-1091, International Trade Commission – Deposition and Hearing before Judge Cheney

\*Certain Intraoral Scanners and Related Hardware and Software, Investigation No. 337-TA-1090, International Trade Commission – Deposition and Hearing before Judge Lord

America's Test Kitchen Inc., as the Sole General Partner of America's Test Kitchen Limited Partnership, v. Christopher Kimball, CPK Media, LLC, Melissa Baldino, Christine Gordon, Deborah Broide doing business as Deborah Broide Publicity, CPK Holdco, LLC and William Thorndike, Superior Court – Suffolk County Massachusetts – Deposition

REXA, Inc. v. Mark Vincent Chester and MEA Inc., Federal Court – Northern District of Illinois – Deposition

Malden Transportation, Inc. et al. v. Uber Technologies, Inc., Federal Court – District of Massachusetts – Deposition

Merck & Co., Inc. v. Merck KGaA, Federal Court – District of New Jersey – Deposition

#### **Publications Within the Past Ten Years**

“Evaluating Reasonable Royalties After ResQNet,” Philip Green, Rachel Hughey, IP Law360, Oct. 2010

“The 25% Rule is Dead – Now What?” Philip Green, Creighton G. Hoffman, IP Law360, Jan. 2011